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REMARKS

Previously, Claims 1-13 were pending in this application. Claim 11 is canceled without prejudice or disclaimer. Claim 13 is amended. Support for the amendment to claim 13 is found in the specification at least on p. 4, line 32 to p. 5, line 14. New claims 14-21 are added. Support for these claims is found at least in claims 1-6 as filed and in the specification at p. 3, lines 30-32; p. 4 line 32 to p. 5, line 14; p. 5, lines 22-29; p. 8, lines 3-4 and line 16; and p. 9, lines 6-8. Thus no new matter is introduced with this amendment. Upon entry of this amendment, claims 1-10, 12-21 are present for consideration.

In response to the Office Action dated November 15, 2005, Applicants respectfully request reconsideration based on the following remarks. Applicants respectfully submit that the claims as presented are in condition for allowance.

Claim Rejections Under 35 U.S.C. §103

Claims 1-2, 5-8 and 11-12 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Cantor et al. (U.S. Patent No. 5,795,714) in view of Koster et al. (U. S. Patent 6,133,436). Applicants respectfully traverse this rejection for the following reasons.

The Examiner states that Cantor et al. teach all features of claim 1 except that Cantor et al. do not specifically disclose the manufacturing of the template array by bringing streptavidin bead-impregnated plastic coated metal pins (i.e., protruding portion) into a solution of biotinylated DNA strands located in a recessed portion of another uneven substrate (e.g., well, concave cavity). The Examiner states that Koster et al. disclose a pin-tool in Figure 8 wherein nucleic acid can be directly captured onto the pin-tool, for example a linking functionality on the pin-tool (e.g., streptavidin) can immobilize the nucleic acid upon contact (Col. 8, lines 6-8) and that immobilization can result from application to the pin-tool of an electric field (Col 8, lines 8-10). The Examiner further states that Figure 14 of Koster et al. shows a pin (i.e., protruding portion) coming into contact with a solution of nucleic acid contained in a recessed portion of another substrate (e.g., concave cavity) in order to immobilize the nucleic acid onto the pin.

Applicants argue that the Examiner has failed to establish a *prima facie* case of obviousness.

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For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Applicants assert that in the present invention, in manufacturing the template nucleic acid array "a protruding portion of the first substrate into contact with a solution of the first nucleic acid probe filling a recessed portion of another uneven substrate" in order to permit many different kinds of nucleic acid probes to be individually and conveniently attached to the first substrate without being mixed together. Bringing the protruding portion of the first substrate into contact with a solution of the first nucleic acid probe filling a recessed portion of another uneven substrate inhibits each first nucleic acid probe which will be immobilized on the first substrate from mixing with other, different first nucleic acid probes (See p. 5, lines 9-17 of the specification). Such an inhibition of mixing different first nucleic acid probes among themselves is necessary to properly manufacture a template nucleic acid array in a time effective manner.

Applicants argue that the pin-tool disclosed by Koster et al. is only a 4 x 4 array and that Koster et al. teach that the pin-tool can function as a "transfer agent" (Col. 7, lines 64-65) for particular nucleic acids or that the pin-tool can function to facilitate the analysis of the captured nucleic acid with a mass spectrometer (see col 8, lines 24-26 or col. 9, lines 15-28). Applicants can find no teaching or suggestion in Koster et al. to use the 4 x 4 pin-tool as a substrate for a template nucleic acid array, or to use the pin-tool to inhibit mixing of different nucleic acids to be captured among themselves. Thus, it would not have been obvious to one of ordinary skill in the art to introduce the pin-tool apparatus disclosed in Koster et al. into the manufacturing of the template array disclosed by Cantor et al. for the purpose of inhibiting differing first nucleic probes from mixing among themselves.

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Additionally, even assuming that all elements of an invention are disclosed in the prior art, an Examiner cannot establish obviousness by locating references that describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would have impelled one skilled in the art to do what the patent applicant has done. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. Int. 1993). The references, when viewed by themselves and not in retrospect, must suggest the invention. *In Re Skoll*, 187 U.S.P.Q. 481 (C.C.P.A. 1975). In view of the uses disclosed by Koster et al. for their 4 x 4 pin tool (as a "transfer agent" for particular nucleic acids or to facilitate analysis of captured nucleic acids with a mass spectrometer), Applicants assert that one of ordinary skill in the art at the time the current application was filed would not have found the required motivation in Koster et al. or Cantor et al. to introduce the pin-tool apparatus of Koster et al. as the substrate for manufacturing the template array disclosed by Cantor et al.

Applicants further argue that the Examiner failed to establish a *prima facie* case of obviousness, because although the Examiner *stated* that one of ordinary skill in the art would have had a reasonable expectation of success practicing a method of replicating a nucleic acid array by the methods of Cantor et al. in combination with the disclosure of Koster et al. regarding use of the pin-tool apparatus, the Examiner provides no evidentiary support for this *statement* and thus failed to meet the burden to establish a proper *prima facie* case of obviousness of claim 1 over Cantor et al. in view of Koster et al. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). MPEP § 2143 - § 2143.03. Applicants assert that in view of the uses disclosed by Koster et al. for their 4 x 4 pin tool (as a "transfer agent" for particular nucleic acids or to facilitate analysis of captured nucleic acids with a mass spectrometer), one of ordinary skill in the art at the time the current application was filed would not have found the required reasonable expectation of success in Koster et al. or Cantor et al. to introduce the pin-tool apparatus of Koster et al. as the substrate for manufacturing the template array disclosed by Cantor et al.

Thus, for all the foregoing reasons, Applicants believe the rejection of Claims 1-2, 5-8 and 11-12 under 35 U.S.C. 103(a) as being allegedly unpatentable over Cantor et al. in view of Koster et al. is improper. Applicants therefore respectfully request reconsideration and withdrawal of this

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rejection of Claims 1-2, 5-8 and 11-12.

Claims 3-4, 9-10 and 13 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Cantor et al. (U.S. Patent No. 5,795,714) in view of Koster et al. (U.S. Patent No. 6,133,436) in further view of Dickinson et al. (U. S. Patent 6,770,441). Applicants respectfully traverse this rejection for the following reasons.

Applicants argue that the Examiner has failed to establish a *prima facie* case of obviousness, and therefore, the obviousness rejection under 35 U.S.C. §103(a) is improper.

Claims 3-4 and 9-10 each include or further limit all of the elements of claim 1. Therefore for an obviousness rejection of Claims 3-4 and 9-10 over Cantor et al. in view of Koster et al. in further view of Dickinson et al. to be proper, the combination of Cantor et al., Koster et al. and Dickinson et al. must disclose all the elements of claim 1 and also those of claims 3-4 and 9-10. Additionally, the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made.

For the reasons discussed above with respect to the rejection of claim 1 over Cantor et al. in view of Koster et al., Applicants assert that the obviousness rejection of claim 1 is improper because neither Cantor et al. nor Koster et al. teach or suggest the pin-tool apparatus disclosed by Koster et al. helps inhibit the mixing of nucleic acid probes to be captured among themselves, and because neither Cantor et al. nor Koster et al. provide the requisite motivation or the requisite expectation of success of the combination in view of the uses of the pin-tool taught by Koster et al. Since Cantor et al. and Koster et al. neither teach nor suggest all three basic criteria of a proper obviousness rejection of claim 1, for the rejection of dependent claims 3-4 and 9-10 over Cantor et al. in view of Koster et al. in further view of Dickinson et al. to be proper, Dickinson et al. must teach or suggest that the pin-tool apparatus disclosed by Koster et al. helps inhibit the mixing of nucleic acid probes to be captured among themselves in addition to the elements of claims 3-4 and 9-10, and also provide the motivation and expectation of success for combining the three references. Applicants can find no such teachings or suggestions in Dickinson et al.

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Additionally, the Examiner states that the combination of Cantor et al. and Koster et al. teach all the elements of claims 3-4, 9-10 and 13, except that they do not disclose a metallic pattern. The Examiner states that Dickinson et al. teach first and second substrates that are previously patterned or surface-treated (col. 10, lines 18-20) and that it would have been obvious to one of ordinary skill in the art to fabricate combine the teachings of Cantor et al. and Dickinson et al. to fabricate a nucleic acid array with a metallic pattern on the substrate for the advantage of "enhanced signal collection from the arrays" (Dickenson et al., col. 10, lines 18-20).

However Applicants cannot find any statement in Dickinson et al. that teaches or suggests first and second substrates that are previously patterned or surface-treated at col. 10, lines 18-20, or elsewhere in Dickinson et al. Col. 10, lines 18-20 of Dickinson et al. teach only that a metal or metal-coated rigid structure can be employed to enhance signal collection. Consequently, as the combination of Cantor et al., Koster et al. and Dickinson et al. fail to teach or suggest each element of independent claim 1, or of dependent claims 3-4 and 9-10, Applicants assert that a *prima facie* case of obviousness has not been established for claims 3-4 and 9-10 over Cantor et al. in view of Koster et al. in further view of Dickinson et al.

Similarly as discussed above for claim 1, in view of the uses disclosed by Koster et al. for their 4 x 4 pin tool, Applicants assert that one of ordinary skill in the art at the time the current application was filed would not have found motivation or expectation of success in Koster et al., Cantor et al., or Dickinson et al. to introduce the pin-tool apparatus of Koster et al. as the substrate for manufacturing the template array disclosed by Cantor et al.

For all the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of this rejection of claims 3-4 and 9-10

Applicants amended independent claim 13 recites that "the surface of the first substrate is patterned with a metallic pattern having protruding portions" and that each first nucleic acid probe includes a terminal thiol group.

Applicants can find no teaching or suggestion in Cantor et al., Koster et al. or Dickinson et al. that the surface of a first substrate is patterned with a metallic pattern having protruding portions or that each first nucleic acid probe includes a terminal thiol group. As the combination of references fails to have all the elements of claim 13, Applicants assert that a *prima facie* case of

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obviousness has not been established for claim 13, over Cantor et al. in view of Koster et al. in further view of Dickinson et al.

Moreover, the Office Action has failed to make any statement regarding the motivation to combine Cantor et al. and Koster et al. with Dickinson et al. Absent motivation to change Cantor et al. with elements provided by Koster et al. and Dickinson et al., no *prima facie* case of obviousness has been established for claims 3-4, 9-10, and 13.

Applicants further argue that the Examiner failed to establish a *prima facie* case of obviousness, because although the Examiner *stated* that one of ordinary skill in the art would have had a reasonable expectation of success practicing a method of replicating a nucleic acid array by the methods of Cantor et al. in combination with the disclosure of Koster et al. regarding use of the pin-tool apparatus, the Examiner provides no evidentiary support for this *statement* and thus failed to meet the burden to establish a proper *prima facie* case of obviousness of claim 13 over Cantor et al. in view of Koster et al. in further view of Dickinson et al. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vacck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991), MPEP § 2143 - § 2143.03.

Consequently, for all the above reasons, Applicants believe the rejection of claim 13 under 35 U.S.C. 103(a) as being allegedly unpatentable over Cantor et al. in view of Koster et al. in further view of Dickinson et al. is improper. Applicants therefore respectfully request reconsideration and withdrawal of this rejection of Claim 13.


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Conclusion

In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is cordially requested to telephone the undersigned.

In the event the Commissioner of Patents and Trademarks deems additional fees to be due in connection with this application, Applicants' attorney hereby authorizes that such fee be charged to Deposit Account No. 06-1130.

Respectfully submitted,
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